
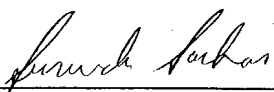


JC10 Rec'd PCT/PTO 14 JAN 2002

FORM PTO-1390 (Modified) (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				217930US0PCT	
				U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 10/030685	
INTERNATIONAL APPLICATION NO. PCT/JP00/04760		INTERNATIONAL FILING DATE 14 JULY 2000		PRIORITY DATE CLAIMED 16 JULY 1999	
TITLE OF INVENTION					
PESTICIDAL COMPOSITION AND METHOD FOR CONTROLLING PESTS					
APPLICANT(S) FOR DO/EO/US					
Munekazu OGAWA, et al.					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 11. <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). 12. <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). 					
Items 13 to 20 below concern document(s) or information included:					
<ol style="list-style-type: none"> 13. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 14. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 15. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 16. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 17. <input type="checkbox"/> A substitute specification. 18. <input type="checkbox"/> A change of power of attorney and/or address letter. 19. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 20. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 21. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 22. <input type="checkbox"/> Certificate of Mailing by Express Mail 23. <input checked="" type="checkbox"/> Other items or information: 					
Notice of Priority / PCT/IB/304 / PCT/IB/308 PTO-1449					

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.01) 10/030685		INTERNATIONAL APPLICATION NO. PCT/JP00/04760		ATTORNEY'S DOCKET NUMBER 217930US0PCT	
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 <div style="text-align: right; margin-top: 5px;"> ENTER APPROPRIATE BASIC FEE AMOUNT = \$890.00 </div>				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	4 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$84.00	\$0.00	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$1,020.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				\$0.00	
SUBTOTAL =				\$1,020.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$0.00	
TOTAL NATIONAL FEE =				\$1,020.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00	
TOTAL FEES ENCLOSED =				\$1,020.00	
				Amount to be refunded	\$
				charged	\$
a. <input checked="" type="checkbox"/> A check in the amount of <u>\$1,020.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>15-0030</u> . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
 22850 Surinder Sachar Registration No. 34,423			<div style="text-align: right; margin-bottom: 10px;">  SIGNATURE </div> <div style="text-align: right; margin-bottom: 10px;"> Norman F. Oblon NAME </div> <div style="text-align: right; margin-bottom: 10px;"> 24,618 REGISTRATION NUMBER </div> <div style="text-align: right;"> <u>Jan 14 2002</u> DATE </div>		
(703) 413-3000					

Docket No. 217930US0PCT

IN RE APPLICATION OF: Munekazu OGAWA, et al.

SERIAL NO: NEW U.S. PCT APPLICATION BASED ON PCT/JP00/04760

FILED: HEREWITH

FOR: PESTICIDAL COMPOSITION AND METHOD FOR CONTROLLING PESTS

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Transmitted herewith is an amendment in the above-identified application.

- ☒ No additional fee is required
- ☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 is claimed.
- ☒ Additional documents filed herewith: Notice of Priority/PCT Transmittal Letter/PCT/IB/304/Preliminary Amendment
PCT/IB/308/International Preliminary Examination Report/Check for \$1,020.00
International Search Report/Information Disclosure Statement/PTO-1449

The Fee has been calculated as shown below:

CLAIMS	CLAIMS REMAINING		HIGHEST NUMBER PREVIOUSLY PAID	NO. EXTRA CLAIMS	RATE	CALCULATIONS	
TOTAL	4	MINUS	20	0	× \$18 =	\$0.00	
INDEPENDENT	1	MINUS	3	0	× \$84 =	\$0.00	
		<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS			+ \$280 =	\$0.00	
		TOTAL OF ABOVE CALCULATIONS					\$0.00
		<input type="checkbox"/> Reduction by 50% for filing by Small Entity					\$0.00
		<input type="checkbox"/> Recordation of Assignment			+ \$40 =	\$0.00	
		TOTAL					\$0.00

- ☐ A check in the amount of **\$0.00** is attached.
- ☒ Please charge any additional Fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
- ☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

OBLON, SPIVAK, McCLELLAND,
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(OSMMN 10/01)

217930US-0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
MUNEKAZU OGAWA ET AL : ATTN: APPLICATION DIVISION
SERIAL NO: NEW U.S. PCT APPLN :
(Based on PCT/JP00/04760)
FILED: HEREWITH :
FOR: PESTICIDAL COMPOSITION AND:
METHOD FOR CONTROLLING PESTS

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows.

IN THE CLAIMS

Please amend the claims as shown in the marked-up copy following this amendment to read as follows.

3. (Amended) A method for controlling pests, which comprises applying the pesticidal composition as defined in Claim 1 to the pests.

Please add the following new claim.

4. (New) A method for controlling pests, which comprises applying the pesticidal composition as defined in Claim 1 to the pests.

REMARKS

Claims 1-4 are active in the present application. Claim 3 has been amended to remove multiple dependency. Claim 4 is a new claim. Support for new Claim 4 is found in the original claims. No new matter is added. An action on the merits and allowance of claims is solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
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217930US-0PCT

Marked-Up Copy

Serial No:

Amendment Filed on:

1-14-2002

IN THE CLAIMS

Please amend the claims as follows.

--3. (Amended) A method for controlling pests, which comprises applying the pesticidal composition as defined in Claim 1 [or 2] to the pests.--

Claim 4 (New).

Rec'd PCT/PTO 14 JAN 2002
10/030685

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DESCRIPTION

PESTICIDAL COMPOSITION AND METHOD FOR CONTROLLING PESTS

TECHNICAL FIELD

The present invention relates to a pesticidal
5 composition useful as an agricultural and horticultural
pesticide having a pesticidal effect, particularly an
exceptionally improved effect of preventing and/or curing
plant diseases, and a method for controlling pests by
using said composition.

10 BACKGROUND ART

JP-A-1-131163 discloses that imidazole compounds to
be used as an active ingredient for the pesticidal
composition of the present invention are useful as
pesticides, and that they can be used together with other
15 fungicides as the case requires. Further, as mixed
pesticidal compositions containing the above imidazole
compounds as active ingredients, ones as disclosed in JP-
A-11-71209, JP-A-11-106301 and JP-A-11-124305, may be
mentioned. Further, WO99/27788 discloses a possible
20 combination of the compound No. 1 as described
hereinafter and (S)-5-methyl-2-methylthio-5-phenyl-3-
phenylamino-3,5-dihydroimidazole-4-one. However, it has
not been known that a pesticidal composition comprising
the above imidazole compound and at least one fungicide
25 selected from the group consisting of (S)-5-methyl-2-
methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-
one, isopropyl 2-methyl-1-[(1-p-tolyloethyl)carbamoyl]-

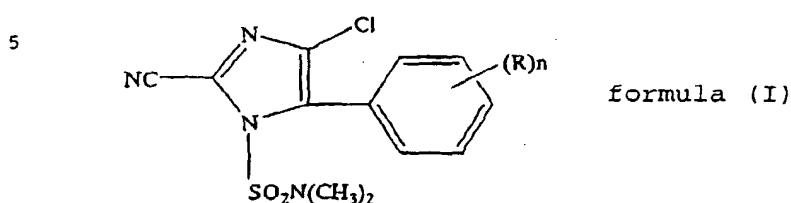
(S)-propylcarbamate, 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxyamide, has a distinguished pesticidal effect.

5 With respect to the pesticidal effect of each imidazole compound of the formula (I) as described hereinafter, its effect may be insufficient against certain specific pests, or the residual effect will last only for a relatively short period of time, so that the
10 pesticidal effect against pests tends to be practically insufficient in some cases.

DISCLOSURE OF THE INVENTION

The present inventors have conducted extensive studies to overcome the above problems and as a result,
15 have found that when the imidazole compound of the formula (I) as described hereinafter is used together with at least one fungicide selected from the group consisting of (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one, isopropyl 2-methyl-1-[(1-p-tolyloethyl)carbamoyl]-(S)-propylcarbamate,
20 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxyamide, an excellent pesticidal effect can be obtained, which is unexpected
25 from a single use of each compound alone. The present invention has been accomplished on the basis of this discovery.

Namely, the present invention relates to a
pesticidal composition comprising at least one imidazole
compound of the formula (I):



wherein R is a lower alkyl group or a lower alkoxy group,
10 and n is an integer of from 1 to 5, and at least one
fungicide selected from the group consisting of (S)-5-
methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-
dihydroimidazole-4-one, isopropyl 2-methyl-1-[(1-p-
tolylethyl)carbamoyl]-(S)-propylcarbamate, 3,5-dichloro-
15 N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-
methylbenzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-
(ethylamino)-5-thiazole carboxamide, as active
ingredients.

In the imidazole compound of the formula (I), as the
20 alkyl moiety in the lower alkyl group or the lower alkoxy
group as defined by R, C₁₋₆ alkyl such as methyl, ethyl,
propyl, butyl, pentyl or hexyl may be mentioned, and they
may be linear or branched. Further, in the case where n
is at least 2, the plurality of R may be the same or
25 different.

Examples of the imidazole compound of the formula
(I) include the following compounds:

4-chloro-2-cyano-1-dimethylsulfamoyl-5-(4-methylphenyl)imidazole (compound No. 1)

4-chloro-2-cyano-1-dimethylsulfamoyl-5-(4-methoxyphenyl)imidazole (compound No. 2)

5 4-chloro-2-cyano-1-dimethylsulfamoyl-5-(4-ethylphenyl)imidazole (compound No. 3), and

4-chloro-2-cyano-1-dimethylsulfamoyl-5-(3-methyl-4-methoxyphenyl)imidazole (compound No. 4)

Here, the imidazole compound of the above formula
10 (I) may be produced by a method as disclosed in JP-A-1-131163 or EP-A-705823.

The above (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one (hereinafter referred to simply as compound a) is a compound as
15 disclosed in THE 1998 BRIGHTON CONFERENCE-Pests & Diseases P.319-326. The above isopropyl 2-methyl-1-[(1-p-tolyloethyl)carbamoyl]-(S)-propylcarbamate (hereinafter referred to simply as compound b) is a compound as
disclosed in THE 1998 BRIGHTON CONFERENCE-Pests &
20 Diseases P.367-374. 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide (hereinafter referred to simply as compound c) is a compound as
disclosed in THE 1998 BRIGHTON CONFERENCE-Pests & Diseases P.335-342. N-(α -cyano-2-thienyl)-4-ethyl-2-
25 (ethylamino)-5-thiazole carboxamide (hereinafter referred to simply as compound d) is a compound as
disclosed in AG CHEM NEW COMPOUND REVIEW VOLUME17 1999,

p.53. The above compounds a, b, c and d are fungicides having a preventive effect and a curative effect.

The pesticidal composition comprising as active ingredients at least one imidazole compound of the above formula (I) and at least one fungicide selected from the group consisting of the compounds a, b, c and d, exhibits an excellent fungicidal effect when applied to cultivated crop plants which are infected or are suspected of being infected with noxious fungi, including vegetables such as cucumber (Cucumis sativus), tomato (Lycopersicon esculentum) and eggplant (Solanum melongena), creal crops such as rice (Oryza sativa) and barley (Hordeum vulgare), beans (Legume), fruit trees such as apple (Malus pumila), pear (Pyrus serotina, Pyrus ussuriensis, Pyrus communis), grape (Vitis vinifera) and citrus (Citrus), and potato (Solanum tuberosum). Said composition is suitable for controlling diseases such as powdery mildew, downy mildew, anthracnose, gray mold, common green mold, scab, Alternaria blotch, bacterial blotch, purple blotch, melanose, late rot, late blight, early blight, rice blast, sheath blight, seedling damping-off and southern blight. Further, said composition exhibits an excellent effect of controlling soil-borne diseases caused by phytopathogenic fungi such as Fusarium, Rhizoctonia, Verticillium, Plasmodiophora and Pythium. The pesticidal composition of the present invention exhibits a long-term residual effect and a preventive and/or curative effect,

and it is particularly excellent in preventive effect.

Specifically, the pesticidal composition of the present invention exhibits an excellent effect of controlling rice blast; rice sheath blight; cucumber anthracnose; downy mildew of cucumber, melon (Cucumis melo), cabbage (Brassica), Chinese cabbage (Brassica), onion (Allium cepa), pumpkin (Cucurbita) and grape; powdery mildew of wheat (Triticum vulgare), barley (Hordeum vulgare) and cucumber; late blight of potato, red pepper (Capsicum annuum), sweet pepper (Capsicum annuum), watermelon (Citrullus vulgaris), pumpkin, tobacco (Nicotiana tabacum) and tomato; wheat Septoria disease; tomato early blight; citrus melanose; citrus common green mold ; pear scab; apple Alternaria blotch; onion white late blight; watermelon brown rot; diseases such as gray mold, Sclerotinia rot, rust and bacterial blotch of various crops; and diseases by Phycomycetes such as soil-borne diseases caused by phytopathogenic fungi such as Fusarium, Pythium, Rhizoctonia and Verticillium. Further, said composition exhibits an excellent effect of controlling diseases caused by Plasmodiophora. More specifically, said composition exhibits a particularly excellent effect of controlling disease such as late blight of potato, red pepper, sweet pepper, watermelon, pumpkin, tobacco and tomato; and downy mildew of cucumber, melon, cabbage, Chinese cabbage, onion, pumpkin and grape.

The pesticidal composition of the present invention further exhibits an excellent effect of controlling agriculturally and horticulturally noxious insects, mites and nematodes, for example, insects such as planthoppers
5 (Delphacidae), diamondback moth (Plutella xylostella), green rice leafhopper (Nephotettix cincticeps), adzuki bean weevil (Callosobruchus chinensis), common cutworm (Spodoptera litura) and green peach aphid (Myzus persicae), mites such as twospotted spider mite
10 (Tetranychus urticae), carmine spider mite (Tetranychus cinnabarinus) and citrus red mite (Panonychus citri), and nematodes such as southern root-knot nematode (Meloidogyne incognita).

The plurality of active ingredients constituting the
15 pesticidal composition of the present invention may be used in combination with an adjuvant to prepare various formulations such as an emulsifiable concentrate, a dust, a wettable powder, an aqueous solution, granules and a suspension concentrate, in the same manner as
20 conventional agricultural chemical formulations. In this case, the compound of the above formula (I) and other specific compound may be mixed and prepared together, or they may be prepared separately and the resulting preparations may be mixed. These formulations can be
25 practically used either as such or after diluted with a diluent such as water to a predetermined concentration. As the adjuvant, carriers, emulsifiers, suspending

agents, thickeners, stabilizers, dispersants, spreaders, wetting agents, penetrating agents, antifreezing agents and antifoaming agents may, for example, be mentioned. They may be added optionally as the case requires. The

5 carriers are classified into solid carriers and liquid carriers. Examples of the solid carriers include powders of animal and plant origin, such as starch, sugar, cellulose powder, cyclodextrin, activated carbon, soybean flour, wheat flour, rice hull powder, wood powder, fish

10 powder and powdered milk; and mineral powders such as talc, kaoline, bentonite, organic bentonite, calcium carbonate, calcium sulfate, sodium bicarbonate, zeolite, diatomaceous earth, white carbon, clay, alumina, silica, sulfur powder and hydrated lime. Examples of the liquid

15 carriers include water; vegetable oil such as soybean oil and cottonseed oil; animal oil such as beef tallow and whale oil; alcohols such as ethyl alcohol and ethylene glycol; ketones such as acetone, methyl ethyl ketone, methyl isobutyl ketone and isophorone; ethers such as

20 dioxane and tetrahydrofuran; aliphatic hydrocarbons such as kerosine, coal oil and liquid paraffin; aromatic hydrocarbons such as toluene, xylene, trimethylbenzene, tetramethylbenzene, cyclohexane and solvent naphtha; halogenated hydrocarbons such as chloroform and

25 chlorobenzene; acid amides such as dimethylformamide; esters such as ethyl acetate and fatty acid glycerin esters; nitriles such as acetonitrile; sulfur-containing

compounds such as dimethyl sulfoxide, and N-methyl-2-pyrrolidone and N,N-dimethylformamide. Examples of the spreaders include sodium alkylsulfate, sodium alkylbenzenesulfonate, sodium lignin sulfonate, polyoxyethylene glycol alkyl ether, polyoxyethylene lauryl ether, polyoxyethylene alkyl aryl ether and polyoxyethylene sorbitan fatty acid ester.

In the pesticidal composition of the present invention, the suitable blending weight ratio of said at least one compound of the formula (I) to said at least one fungicide selected from the group consisting of the compounds a, b, c and d, is generally from 1:10000 to 10000:1, preferably from 1:1000 to 10000:1, more preferably from 1:200 to 200:1. Further, the most preferred blending weight ratio of said at least one compound of the formula (I) to the compound a is from 1:150 to 3:1.

The present invention further provides a method for controlling pests, which comprises applying the pesticidal composition of the present invention to the pests. The concentrations of the active ingredients in the pesticidal composition of the present invention at the time of application vary depending upon the crop plant as the object, the way of application, the form of a formulation, the dose, the application season and the type of noxious fungi, and hence can not be generically determined. However, in the case of foliage treatment,

the concentration of the compound of the formula (I) as the active ingredient is generally from 0.01 to 1,000 ppm, preferably from 0.3 to 500 ppm, and the concentration of said at least one fungicide selected
5 from the group consisting of the compounds a, b, c and d, as the active ingredient, is generally from 0.01 to 1,000 ppm, preferably from 0.5 to 500 ppm.

BEST MODE FOR CARRYING OUT THE INVENTION

Now, examples of preferred embodiments of the
10 pesticidal composition of the present invention are described below. However, the present invention is by no means restricted thereto.

(1) A pesticidal composition comprising at least one compound of the formula (I) and (S)-5-methyl-2-
15 methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one as active ingredients.

(2) The pesticidal composition of item (1), wherein the weight ratio of said at least one compound of the formula (I) to (S)-5-methyl-2-methylthio-5-phenyl-3-
20 phenylamino-3,5-dihydroimidazole-4-one is from 1:1000 to 10000:1.

(3) The pesticidal composition of item (1), wherein the weight ratio of said at least one compound of the formula (I) to (S)-5-methyl-2-methylthio-5-phenyl-3-
25 phenylamino-3,5-dihydroimidazole-4-one is from 1:200 to 200:1.

(4) The pesticidal composition of item (1), wherein

the weight ratio of said at least one compound of the formula (I) to (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one is from 1:150 to 3:1.

5 (5) A pesticidal composition comprising at least one compound of the formula (I) and isopropyl 2-methyl-1-[(1-p-tolyloethyl)carbamoyl]-(S)-propylcarbamate as active ingredients.

(6) A pesticidal composition comprising at least one
10 compound of the formula (I) and 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide as active ingredients.

(7) A pesticidal composition comprising at least one
15 compound of the formula (I) and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxamide as active ingredients.

Now, Test Examples of the present invention will be described below. However, the present invention is by no means restricted thereto.

20 TEST EXAMPLE 1

Test on preventive effect against cucumber downy mildew

Cucumber (cultivar: Suyo) was cultivated in a polyethylene pot having a diameter of 7.5 cm, and when the cucumber reached a two-leaf stage, two seedlings of
25 the cucumber were sprayed with a drug solution having predetermined concentrations of sample compounds in an amount of 1,000 l/ha by a spray gun. On the next day

12.

after the treatment, the cucumber was sprayed and inoculated with a zoosporangia suspension of fungi of cucumber downy mildew, and the cucumber was kept in a moist chamber at 20°C for 18 hours. Then, it was kept in a constant temperature chamber of 20°C for from 6 to 7 days, and the average area of lesions on the first leaves of the two seedlings was examined to find the incidence according to the following formula. Here, the average area of lesions in the non-treated plot was obtained in the same manner as the treated plot, except that the cucumber was sprayed with water instead of the drug solution by a spray gun. The results are shown in Tables 1 to 4.

$$\text{Incidence} = (a/b) \times 100$$

a: Average area of lesions in the treated plot

b: Average area of lesions in the non-treated plot

Further, the theoretical value can be calculated from the following Colby's formula:

$$\text{Theoretical value} = (X \times Y) / 100$$

X: Incidence (%) in the case of treatment with the compound No. 1 alone

Y: Incidence (%) in the case of treatment with the compound a, b, c or d alone

When the experimental values are lower than the theoretical values by Colby's formula, the pesticidal composition of the present invention has a synergistic effect of controlling pests. The theoretical values by

Colby's formula in such cases are shown in parenthesis
() in Tables 1 to 4.

Table 1

Compd. No. 1 Compd. <u>a</u>	Incidence of cucumber downy mildew (theoretical value)			
	0.25ppm	0.125ppm	0.062ppm	0ppm
1ppm	2.6	0(2.6)	7.7(10.8)	12.8
0.5ppm	0(3.4)	2.6(13.7)	23.1(56.4)	66.7
0.25ppm	2.6(4.2)	30.8	61.5(69.4)	82.1
0ppm	5.1	20.5	87.6	

Table 2

Compd. No. 1 Compd. <u>b</u>	Incidence of cucumber downy mildew (theoretical value)		
	0.125ppm	0.062ppm	0ppm
16ppm	5.2(8.8)	30.9	15.5
8ppm	10.3(26.3)	56.7	46.4
4ppm	25.8(38.0)	51.5(58.7)	67.0
2ppm	30.9(49.7)	92.8	87.6
0ppm	56.7	84.6	

5 Table 3

Compd. No. 1 Compd. <u>c</u>	Incidence of cucumber downy mildew (theoretical value)			
	0.25ppm	0.125ppm	0.062ppm	0ppm
2ppm	5.1	0(1.6)	35.6	61.0
1ppm	0(1.8)	0(1.8)	15.3(18.1)	71.2
0.5ppm	0(2.4)	2.5	15.3(24.4)	95.8
0ppm	2.5	2.5	25.4	

Table 4

Compd. No. 1 Compd. <u>d</u>	Incidence of cucumber downy mildew (theoretical value)				
	1ppm	0.5ppm	0.25ppm	0.06ppm	0ppm
16ppm	0	0(0.5)	0(1.0)	7.5(17.0)	20
8ppm	0	0(0.38)	0(0.75)	7.5(12.8)	15
1ppm	0	0(2.5)	2.5(5.0)	80(85)	100
0ppm	0	2.5	5.0	85	

TEST EXAMPLE 2

Test on preventive effect against tomato late blight

Tomato (cultivar: Ponderosa) was cultivated in a polyethylene pot having a diameter of 7.5 cm, and when the tomato reached a four-leaf stage, two seedlings of the tomato were sprayed with a drug solution having predetermined concentrations of sample compounds in an amount of 1,000 l/ha by a spray gun. On the next day after the treatment, the tomato was sprayed and inoculated with a zoosporangia suspension of fungi of tomato late blight, and the tomato was kept in a moist chamber at 20°C for 18 hours. Then, it was kept in a constant temperature chamber of 20°C for 3 days, and the degree of disease outbreak of leaves was examined as described below, to find the degree of disease from the following formula:

Degree of disease outbreak

- 0: No lesions were recognizable
- 1: Lesions were slightly recognizable
- 2: Area of lesions is less than 25% of the area of leaves
- 3: Area of lesions is at least 25% and less than 50% of the area of leaves
- 4: Area of lesions is not smaller than 50% of the area of leaves

Degree of disease =

$$[(0 \times A + 1 \times B + 2 \times C + 3 \times D + 4 \times E) / \{4 \times (A + B + C + D + E)\}] \times 100$$

- A: Number of leaves with degree of disease outbreak of 0
B: Number of leaves with degree of disease outbreak of 1
C: Number of leaves with degree of disease outbreak of 2
D: Number of leaves with degree of disease outbreak of 3
5 E: Number of leaves with degree of disease outbreak of 4

Further, using the average degree of disease of two seedlings, the incidence was calculated from the following formula, and the results are shown in Tables 5 to 8. Here, the average degree of disease of the non-
10 treated plot was obtained in the same manner as the treated plot, except that the tomato was sprayed with water instead of the drug solution by a spray gun.

$$\text{Incidence} = (a'/b') \times 100$$

a': Average degree of disease of treated plot

15 b': Average degree of disease of non-treated plot

Further, a theoretical value can be calculated from the following Colby's formula. When the experimental values are lower than the theoretical values by Colby's formula, the pesticidal composition of the present
20 invention has a synergistic effect of controlling pests. Theoretical values by the Colby's formula in such cases are shown in parenthesis () in Tables 5 to 8.

$$\text{Theoretical value} = (X' \times Y') / 100$$

X': Incidence (%) in the case of treatment with the
25 compound No. 1 alone

Y': Incidence (%) in the case of treatment with the compound a, b, c or d alone

Table 5

Compd.No.1 Compd. <u>a</u>	Incidence of tomato late blight (theoretical value)			
	0.25ppm	0.125ppm	0.062ppm	0ppm
1ppm	3.2(13.7)	18.9(37.0)	25.2(48.8)	53.5
0.5ppm	6.3(16.9)	22.0(45.7)	44.1(60.3)	66.1
0.25ppm	25.2	31.5(65.4)	56.6(86.1)	94.4
0.125ppm	31.5	31.5(67.3)	81.8(88.7)	97.2
0.062ppm	34.6	53.5(69.2)	66.1(91.3)	100
0ppm	25.6	69.2	91.3	

Table 6

Compd.No.1 Compd. <u>b</u>	Incidence of tomato late blight (theoretical value)				
	0.50ppm	0.25ppm	0.125ppm	0.062ppm	0ppm
8ppm	18.8(23.4)	15.6(36.6)	31.3(41.0)	34.4(42.5)	46.9
4ppm	18.8(35.9)	46.9(56.2)	56.3(62.9)	56.3(65.1)	71.9
1ppm	28.1(50.0)	75.0(78.1)	87.5(87.5)	87.5(90.6)	100
0ppm	50.0	78.1	87.5	90.6	

Table 7

Compd.No.1 Compd. <u>c</u>	Incidence of tomato late blight (theoretical value)				
	0.50ppm	0.25ppm	0.125ppm	0.062ppm	0ppm
8ppm	0(2.0)	3.1(6.8)	6.3(11.7)	9.4(20.5)	31.3
4ppm	0(3.9)	12.5(13.7)	28.1	28.1(41.0)	62.5
1ppm	0(3.9)	6.3(13.7)	18.8(23.4)	37.5(41.0)	62.5
0ppm	6.3	21.9	37.5	65.6	

Table 8

Compd.No.1 Compd. <u>d</u>	Incidence of tomato late blight (theoretical value)			
	0.5ppm	0.25ppm	0.125ppm	0ppm
16ppm	0	4.2(16.5)	12.5(16.5)	16.5
8ppm	12.5	25(29.2)	25(29.2)	29.2
4ppm	20.9	41.7(75)	54.2(75)	75
0ppm	83.4	100	100	

- 5 Now, the Formulation Examples of the pesticidal composition of the present invention will be described below. However, the present invention is by no means restricted thereto.

FORMULATION EXAMPLE 1

- | | | | |
|---|-------|--|--------------------|
| | (i) | Kaoline | 78 parts by weight |
| | (ii) | Sodium β -naphthalenesulfonate formalin condensate | 2 parts by weight |
| 5 | (iii) | Polyoxyethylenealkylaryl sulfate | 5 parts by weight |
| | (iv) | Hydrated amorphous silicon dioxide | 15 parts by weight |

A mixture of the above components, the compound No. 1 and the compound a are mixed in a weight ratio of 8:1:1 to obtain a wettable powder.

FORMULATION EXAMPLE 2

- | | | | |
|----|-------|-------------------------|--------------------|
| | (i) | Compound No. 1 | 0.5 part by weight |
| | (ii) | Compound <u>a</u> | 0.5 part by weight |
| 15 | (iii) | Bentonite | 20 parts by weight |
| | (iv) | Kaoline | 74 parts by weight |
| | (v) | Sodium lignin sulfonate | 5 parts by weight |

To the above components, water required for granulation was added in an appropriate amount, followed by mixing and granulation to obtain granules.

FORMULATION EXAMPLE 3

- | | | | |
|----|-------|-------------------------|----------------------|
| | (i) | Compound No. 1 | 0.25 part by weight |
| | (ii) | Compound <u>a</u> | 0.25 part by weight |
| | (iii) | Calcium carbonate | 99.0 parts by weight |
| 25 | (iv) | Lower alcohol phosphate | 0.5 part by weight |

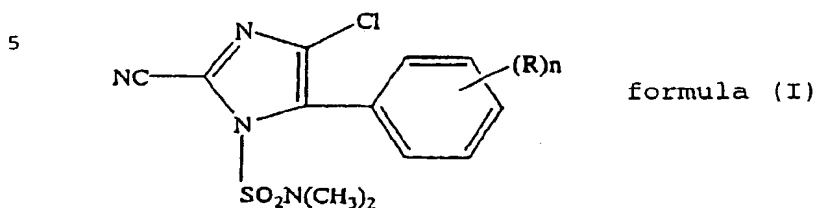
The above components are uniformly mixed to obtain a dust.

INDUSTRIAL APPLICABILITY

The pesticidal composition of the present invention has a stable and high effect of controlling pests over crop plants which suffer from plant diseases caused by
s pests, and the pests can be controlled by using said composition.

CLAIMS

1. A pesticidal composition comprising at least one imidazole compound of the formula (I):



wherein R is a lower alkyl group or a lower alkoxy group,
 10 and n is an integer of from 1 to 5, and at least one fungicide selected from the group consisting of (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one, isopropyl 2-methyl-1-[(1-p-tolylethyl)carbamoyl]-(S)-propylcarbamate, 3,5-dichloro-
 15 N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxyamide, as active ingredients.

2. The pesticidal composition according to Claim 1,
 20 wherein the weight ratio of the imidazole compound of the formula (I) to said at least one fungicide selected from the group consisting of (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one, isopropyl 2-methyl-1-[(1-p-tolylethyl)carbamoyl]-(S)-
 25 propylcarbamate, 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxyamide,

20

is from 1:10,000 to 10,000:1.

3. A method for controlling pests, which comprises applying the pesticidal composition as defined in Claim 1 or 2 to the pests.

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(54) Title: PESTICIDAL COMPOSITION AND METHOD FOR CONTROLLING PESTS

(57) Abstract: A pesticidal composition comprising at least one specific imidazole compound and at least one fungicide selected from the group consisting of (S)-5-methyl-2-methylthio-5-phenyl-3-phenylamino-3,5-dihydroimidazole-4-one, isopropyl 2-methyl-1-[(1-p-tolylethyl)carbamoyl]-(S)-propylcarbamate, 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methyl-banzamide and N-(α -cyano-2-thienyl)-4-ethyl-2-(ethylamino)-5-thiazole carboxamide, as active ingredients.

WO 01/05231 A3

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

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- ☐ ____月____日に提出され、米国出願番号または特許協定条約国際出願番号を____とし、
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As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

PESTICIDAL COMPOSITION AND METHOD

FOR CONTROLLING PESTS

the specification of which

- ☐ is attached hereto.
- ☒ was filed on July 14, 2000
as United States Application Number or
PCT International Application Number
PCT/JP00/04760 and was amended on
_____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

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私は、米国法典第35編119条 (a) - (d) 項又は365条 (b) 項に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365 (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

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(番号)

Japan

(Country)
(国名)

(Number)
(番号)

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(国名)

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PCT/JP00/04760

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(出願番号)

July 14, 2000

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(出願日)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

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I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed

優先権主張

16/July/1999

(Day/Month/Year Filed)
(出願年月日)

☒

Yes
はい

☐

No
いいえ

(Day/Month/Year Filed)
(出願年月日)

☐

Yes
はい

☐

No
いいえ

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

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(出願番号)

(Filing Date)
(出願日)

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Pending

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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委任状：私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。
(弁護士、または代理人の指名及び登録番号を明記のこと)

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022850

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(Supply similar information and signature for third and subsequent joint inventors.)